

CLAIMS

I/We claim:

- [c1] 1. A method of effectuating a neural-function in a patient, comprising:
selecting a stimulation site at the cortex of the patient where a change in
neural-activity is suspected of occurring to carry out a particular
physical function and/or cognitive function of the patient;
positioning an electrode at the selected stimulation site; and
applying an electrical potential to the stimulation site via the electrode.
- [c2] 2. The method of claim 1 wherein:
the method further comprises providing a first listing containing a plurality
of physical functions and/or cognitive functions and a second listing
containing a plurality of neural-sites in the cortex where
neural-activity is suspected to change to carry out a particular one of
the physical functions and/or cognitive functions; and
selecting a stimulation site comprises identifying a physical function and/or
cognitive function in the first listing that is correlated to an altered
function of the patient, and determining a corresponding neural-site
in the cortex of the patient in the second listing.
- [c3] 3. The method of claim 1 wherein selecting the stimulation site
comprises choosing a stimulation site adjacent to a damaged region of the cortex
where neural-activity for carrying out an impaired function of the patient was
performed before damage occurred to the cortex.
- [c4] 4. The method of claim 1 wherein, in a case in which the patient has
experienced a stroke at the primary motor cortex in the frontal lobe, the procedure

of selecting a stimulation site comprises choosing a stimulation site at the premotor cortex anterior to the stroke in the frontal lobe and the procedure of positioning an electrode comprises placing an electrode at the premotor cortex anterior to the stroke in the frontal lobe.

[c5] 5. The method of claim 1 wherein, in a case in which the patient has experienced a stroke in the frontal lobe, the procedure of selecting a stimulation site comprises choosing a stimulation site at the supplementary motor cortex anterior to the stroke in the frontal lobe and the procedure of positioning an electrode comprises placing an electrode at the supplementary motor cortex anterior to the stroke in the frontal lobe.

[c6] 6. The method of claim 1 wherein, in a case in which the patient has expressive language disorders, the selecting procedure comprises choosing a stimulation site at Broca's area of the inferior frontal lobe of the cortex and the positioning procedure comprises placing an electrode at Broca's area of the inferior frontal lobe of the cortex.

[c7] 7. The method of claim 1 wherein, in a case in which the patient has language comprehension disorders, the selecting procedure comprises choosing a stimulation site at Wernick's area of the parietal lobe of the cortex and the positioning procedure comprises placing an electrode at Wernick's area of the parietal lobe.

[c8] 8. The method of claim 1 wherein, in a case in which the patient has learning and memory disorders, the selecting procedure comprises choosing the stimulation site at a medial temporal lobe of the cortex and the positioning procedure comprises placing the electrode at the medial temporal lobe of the cortex.

- [c9] 9. The method of claim 1 wherein, in a case in which the patient has mood disorders, the selecting procedure comprises choosing the stimulation site at a limbic system component and the positioning procedure comprises placing an electrode at the limbic system component.
- [c10] 10. A method of effectuating a neural-function in a patient, comprising:
selecting a stimulation site at the cortex of the patient where a change in neural-activity is expected to occur to carry out a particular physical function and/or cognitive function of the patient that has been altered;
positioning an electrode at the stimulation site; and
applying an electrical potential to the stimulation site via the electrode.
- [c11] 11. The method of claim 10 wherein:
the method further comprises providing a first listing containing a plurality of physical functions and/or cognitive functions and a second listing containing a plurality of neural-sites in the cortex where neural-activity is suspected to change to carry out a particular one of the physical functions and/or cognitive functions; and
selecting a stimulation site comprises identifying a physical function and/or cognitive function in the first listing correlated to the altered function and determining a corresponding neural-site in the cortex of the patient in the second listing.
- [c12] 12. The method of claim 10 wherein selecting the stimulation site comprises choosing a stimulation site adjacent to a damaged region of the cortex where neural-activity for carrying out the altered function was performed before damage occurred to the cortex.

[c13] 13. The method of claim 10 wherein, in a case in which the patient has experienced a stroke at the primary motor cortex in the frontal lobe, the procedure of selecting a stimulation site comprises choosing a stimulation site at the premotor cortex anterior to the stroke in the frontal lobe and the procedure of positioning an electrode comprises placing an electrode at the premotor cortex anterior to the stroke in the frontal lobe.

[c14] 14. The method of claim 10 wherein, in a case in which the patient has experienced a stroke in the frontal lobe, the procedure of selecting a stimulation site comprises choosing a stimulation site at the supplementary motor cortex anterior to the stroke in the frontal lobe and the procedure of positioning an electrode comprises placing an electrode at the supplementary motor cortex anterior to the stroke in the frontal lobe.

[c15] 15. The method of claim 10 wherein, in a case in which the patient has expressive language disorders, the selecting procedure comprises choosing a stimulation site at Broca's area of the inferior frontal lobe of the cortex and the positioning procedure comprises placing an electrode at Broca's area of the inferior frontal lobe of the cortex.

[c16] 16. The method of claim 10 wherein, in a case in which the patient has language comprehension disorders, the selecting procedure comprises choosing a stimulation site at Wernick's area of the parietal lobe of the cortex and the positioning procedure comprises placing an electrode at Wernick's area of the parietal lobe.

[c17] 17. The method of claim 10 wherein, in a case in which the patient has learning and memory disorders, the selecting procedure comprises choosing the stimulation site at a medial temporal lobe of the cortex and the positioning

procedure comprises placing the electrode at the medial temporal lobe of the cortex.

[c18] 18. The method of claim 10 wherein, in a case in which the patient has mood disorders, the selecting procedure comprises choosing the stimulation site at a limbic system component and the position procedure comprises placing an electrode at the limbic system component.

[c19] 19. A method of effectuating a neural-function in a patient, comprising:
providing a first listing containing a plurality of physical functions and/or cognitive functions and a second listing containing a plurality of neural-sites in the cortex where neural-activity is suspected to change to carry out a particular one of the physical functions and/or cognitive functions;
selecting a stimulation site in the cortex of the patient for a physical function and/or a cognitive function in the patient that has been altered by identifying the altered function in the first listing and determining a corresponding neural-site in the cortex of the patient in the second listing; and
applying an electrical potential to the selected stimulation site via an electrode.

[c20] 20. The method of claim 19 wherein, in a case in which the patient has experienced a stroke at the primary motor cortex in the frontal lobe, the procedure of selecting a stimulation site comprises choosing a stimulation site at the premotor cortex anterior to the stroke in the frontal lobe and the procedure of positioning an electrode comprises placing an electrode at the premotor cortex anterior to the stroke in the frontal lobe.

- [c21] 21. The method of claim 19 wherein, in a case in which the patient has experienced a stroke in the frontal lobe, the procedure of selecting a stimulation site comprises choosing a stimulation site at the supplementary motor cortex anterior to the stroke in the frontal lobe and the procedure of positioning an electrode comprises placing an electrode at the supplementary motor cortex anterior to the stroke in the frontal lobe.
- [c22] 22. The method of claim 19 wherein, in a case in which the patient has expressive language disorders, the selecting procedure comprises choosing a stimulation site at Broca's area of the inferior frontal lobe of the cortex and the positioning procedure comprises placing an electrode at Broca's area of the inferior frontal lobe of the cortex.
- [c23] 23. The method of claim 19 wherein, in a case in which the patient has language comprehension disorders, the selecting procedure comprises choosing a stimulation site at Wernick's area of the parietal lobe of the cortex and the positioning procedure comprises placing an electrode at Wernick's area of the parietal lobe.
- [c24] 24. The method of claim 19 wherein, in a case in which the patient has learning and memory disorders, the selecting procedure comprises choosing the stimulation site at a medial temporal lobe of the cortex and the positioning procedure comprises placing the electrode at the medial temporal lobe of the cortex.
- [c25] 25. The method of claim 19 wherein, in a case in which the patient has mood disorders, the selecting procedure comprises choosing the stimulation site at a limbic system component and the position procedure comprises placing an electrode at the limbic system component.

[c26] 26. In a patient that has an impaired physical function and/or cognitive function, a method of effectuating a neural-function for carrying out the impaired function comprising:

selecting a stimulation site at the cortex of the patient where a change in neural-activity is suspected of occurring to carry out the impaired function;

positioning an electrode at the stimulation site; and
applying an electrical potential to the stimulation site via the electrode.

[c27] 27. In a patient that has an impaired physical function and/or cognitive function, a method of effectuating a neural-function for carrying out the impaired function comprising:

selecting a stimulation site adjacent to a damaged region of the cortex where neural-activity for carrying out the impaired function was performed before becoming impaired;

positioning an electrode at the stimulation site; and
applying an electrical potential to the stimulation site via the electrode.

[c28] 28. In a patient that has experienced a stroke at the primary motor cortex in the frontal lobe, a method of effectuating a neural-function comprising:

positioning an electrode in the patient at the premotor cortex anterior to the stroke in the frontal lobe; and

applying an electrical potential to the premotor cortex via the electrode.

[c29] 29. In a patient that has experienced a stroke at the primary motor cortex in the frontal lobe, a method of effectuating a neural-function comprising:

positioning an electrode in the patient at the supplementary motor cortex anterior to the stroke in the frontal lobe; and

applying an electrical potential to the supplementary motor cortex via the electrode.

- [c30] 30. In a patient that has expressive language disorders, a method of effectuating a neural-function comprising:
 positioning an electrode in the patient at Broca's area of the inferior frontal lobe of the cortex of the patient; and
 applying an electrical potential to Broca's area of the inferior frontal lobe via the electrode.
- [c31] 31. In a patient that has language comprehension disorders, a method of effectuating a neural-function comprising:
 positioning an electrode in the patient at Wernick's area of the parietal lobe of the cortex of the patient; and
 applying an electrical potential to the Wernick's area of the parietal lobe via the electrode.
- [c32] 32. In a patient that has learning and memory disorders, a method of effectuating a neural-function comprising:
 positioning an electrode in the patient at a medial temporal lobe of the cortex of the patient; and
 applying an electrical potential to the medial temporal lobe via the electrode.
- [c33] 33. In a patient that has mood disorders, a method of effectuating a neural-function comprising:
 positioning an electrode in the patient at a limbic system component of the patient; and
 applying an electrical potential to the limbic system component via the electrode.